

Appln. No. 10/666,593

Attorney Docket No. DKT03009

II. Remarks

Claims 1 through 20 are pending in the application. Claims 1, 9 and 15 have been amended. Claims 14 and 19 have been cancelled. No new claims have been added.

Rejections Under 35 USC § 103

Claims 1 through 4, 9 through 12, 13 through 15 and 19 through 20 were rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,327,935 issued to Joslin et al. (Joslin) in view of U.S. Patent No. 5,893,896 issued to Imamura et al. (Imamura).

Joslin discloses a dual clutch rear axle having a pair of independently operable (left and right) electromagnetic clutches. In the Office Action of May 6, 2005, the Examiner characterizes Joslin as having a rear axle (36) having an input (70) adapted to receive drive torque and drive a pair of independently operable clutches (120A, 120B), etc.

Applicants' attorney, however, disputes the Examiner's characterization of the microprocessor 50 in which he states that:

the microprocessor arbitrates between the outputs of traction controllers and a dynamics controller, see column 7, line 10 - column 9, line 29, where the microprocessor is understood to provide controller sections directed to traction control (SLIP/traction functions) and directed to dynamics control (YAW/attitude functions).

First of all, there is nothing in the Joslin '935 reference that either teaches or suggests this characterization of the microprocessor 50. Secondly, the column and line number reference does not appear to relate to the Joslin patent and therefore does not appear to support the alleged microprocessor function. Lastly, there is simply no objective support in Joslin for the Examiner's assertion that the

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BRINKS
HOFER
GILSON
LIONE

BRINKS HOFER GILSON & LIONE
PO Box 10395
Chicago, IL 60611-6599

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microprocessor "is understood" to provide controller section directed to traction control and dynamics control.

In fact, the limited disclosure regarding the microprocessor 50 and its operation is contained within Figure 4 and lines 30 through 46 of column 4. Accordingly, Joslin does not provide any basis for suggesting that arbitration occurs between the outputs of the traction controller and the dynamics controller as those terms are utilized in the present disclosure and claims and likewise provides no support that the microprocessor of Joslin et al. even includes sections directed to traction control and dynamics control. Furthermore, and as the Examiner correctly points out, Joslin et al. does not teach incorporation of any sensors beyond speed sensors and thus does not teach the use of a steering angle sensor, a lateral acceleration sensor, a yaw rate sensor nor a throttle position sensor.

The Joslin reference was combined by the Examiner with Imanura, et al., U.S. Patent No. 5,893,896. Imanura teaches a complex stability control system which, upon study, is quickly determined to relate not to stability achieved by the control of torque application as Applicants teach, but rather vehicle control through control of the vehicle braking system. This basic distinction is well taught in Figure 2 where a complex hydraulic pressure actuator 13 controls the application and pressure of hydraulic fluid to a four wheel (service) brake cylinders 20.

Applicants' attorney does acknowledge that the control system includes a throttle valve opening angle sensor 16. Curiously, this throttle angle sensor is utilized in a closed loop feedback system to provide confirmation to an engine controller 9 that a signal from the throttle valve opening angle controller 10 has, in fact, energized the throttle actuator 11 and thus the throttle valve to the desired opening as commanded by the throttle valve angle controller 10. That wheel braking

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BRINKS HOFER GILSON & LIONE
PO Box 10395
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is the modus operandi of this system is confirmed in the sentence beginning in column 6 at line 60:

Thus, the vehicular attitude is detected by means of the sensors 1 to 7, 15 and 16 and the whole road wheel torque is controlled by varying the braking force applied to each road wheel and the braking liquid pressure to each wheel cylinder 20.

At the outset, it is not understood how the abbreviated torque control disclosure of Joslin can be combined with Imamura which relates to a brake actuating system to create a rational operating system, much less one that duplicates or suggests Applicants' structure and function. Moreover, because of the gross differences in structure and function of the systems, Applicants' attorney has detected nothing in their disclosures which suggests their combination or modification. Assuming, for purposes of argument, that the operational disclosure of Joslin did teach a greater and therefore sufficient quantum of Applicants' operating system, it is illogical to attempt to combine one system (Joslin) that controls torque or drive energy application with another system (Imamura) which controls braking application. The combination of Joslin and Imamura fall far short of rendering claims 1 through 4, 98 through 12, 13, 15, 19, and 20 obvious.

Notwithstanding these differences, both between the references and the teachings of the references and Applicants' invention, independent claims 1, 9 and 15 have been revised in order to more particularly point out and distinctly claim the subject matter Applicants regard as the invention. Specifically, the language in both apparatus and process claims has been augmented to clarify the signals provided to the microprocessor, the modular or subroutine features within the microprocessor and how the clutch output signals are generated. When viewed against the prior art,

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BRINKS
HOFFER
GILSON
LIONE

BRINKS HOFER GILSON & LIONE
PO Box 10395
Chicago, IL 60611-5599

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it is submitted that independent claims 1, 9 and 15 are patentable under a proper interpretation of 35 U.S.C. §103.

Claims 6 and 8 were rejected under 35 U.S.C. §103(a) as being unpatentable over Joslin and Imamura as applied to claim 1, in further view of U.S. Patent No. 5,029,660 issued to Raad et al. (Raad).

Joslin and Imamura have been discussed above and the text relating thereto is incorporated herein by reference. Raad teaches a steering control apparatus and method for motor vehicles. As such, it includes two sensors: a motor vehicle speed sensor and a steering angle sensor. From such data, the system provides closed loop feedback to accurately provide power steering assist by controlling the delivery of pressurized fluid to a steering rack fluid assist cylinder. The system is intended to provide accurate, controllable and repeatable steering effort in spite of varying conditions such as temperature, fluid viscosity, battery voltage, and mechanical and electrical variations in the components.

The citation of Raad is not fully understood but appears to be based upon the use of a PWM drive to an actuator. However, the system within which this electronic device is utilized is far removed from Applicants' vehicle stability and electromagnetic dual clutch rear axle system. The three references do not disclose the invention, do not suggest their combination or modification to disclose the claimed invention and thus claims 6 and 8 are patentable under a proper interpretation of 35 U.S.C. §103.

Claim 5 was rejected under 35 U.S.C. §103(a) as being unpatentable over Joslin and Imamura as applied to claim 1, in view of U.S. Patent No. 4,491,097 issued to Karnopp et al. (Karnopp).

Karnopp is apparently cited for its disclosure of a steering angle sensor 25. Although this reference relates to control of the yaw rate of a vehicle, it teaches the

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BRINKS
HOFER
GILSON
& LIONE

BRINKS HOFER GILSON & LIONE
PO Box 10395
Chicago, IL 60611-5599

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control of yaw rate solely within the confines of control of the vehicle steering assembly and thus the steering angle of the front or steering wheels. The reference teaches nothing regarding the control of vehicle stability through adjustment of torque application as Applicants do. Accordingly, while it does teach a steering sensor angle, its combination with Joslin and Imamura fall well short of rendering claim 5 obvious and it should be allowed.

Claims 7, 11, 12, 16 and 18 were rejected under 35 U.S.C. §103(a) as being unpatentable over Joslin and Imamura as applied to claim 1 and claim 9, respectively, in further view of U.S. Patent No. 5,842,754 issued to Sano (Sano).

Sano teaches a turn control apparatus for a vehicle which is alleged to improve its stability. The system is similar to Imamura in that it, first of all, includes a wheel speed sensor at every wheel location but also includes sensors such as a steering angle sensor, a lateral acceleration sensor and a yaw rate sensor. Once again, however, this data is utilized to control the vehicle brakes, i.e., the dissipation of vehicle speed and engine torque. Both data processing components and the processing steps are distinct from Applicants' components and steps. A yaw or vehicle stability system based on torque control is not similar to and simply cannot be replaced by a system based upon brake control. Sano therefore does not cure the defects of the Joslin and Imamura references and claims 7, 11, 12, 16 and 19 are patentable.

Claim 17 was rejected under 35 USC §103(a) as being unpatentable over Joslin and Imamura, and Sano, as applied to claim 16, in further view of Raad.

The Joslin, Imamura, Sano and Raad references have all been discussed above and the relevant text is hereby incorporated fully by reference. Claim 17 relates to the incorporation of a PID controller in the microprocessor. Whereas Raad

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BRINKS HOFER GILSON & LIONE
PO Box 10395
Chicago, IL 60611-5599

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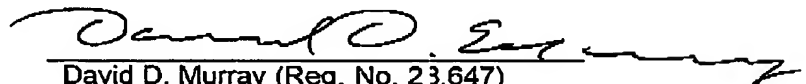
teaches the use of a PID controller at block 94, it does so within the context of a system, noted above, having extraordinarily little relevance with regard to a vehicle traction control system. In fact, Raad relates to a closed loop control system for improving the accuracy of fluid assisted steering. Its relevance to a vehicle stability system having no output related to or affecting the position of the vehicle steering wheels is small indeed. Accordingly, claim 7 is patentable under a proper interpretation of 35 U.S.C. §103(a) and should be allowed.

Entry of this amendment and the foregoing 18 claims under the provisions of 37 C.F.R. §1.116 is respectively requested. Such claim amendments were not previously submitted on a good faith belief that the claims previously patentably distinguished over the cited prior art. Entry of this Amendment in order to achieve allowance of this patent application or place it in better form for consideration on appeal is therefore appropriate.

Respectfully submitted,

August 8, 2005

Date


David D. Murray (Reg. No. 23,647)
Attorney for Applicants

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BRINKS
HOFER
GILSON
LIONE

BRINKS HOFER GILSON & LIONE
PO Box 10395
Chicago, IL 60611-5599